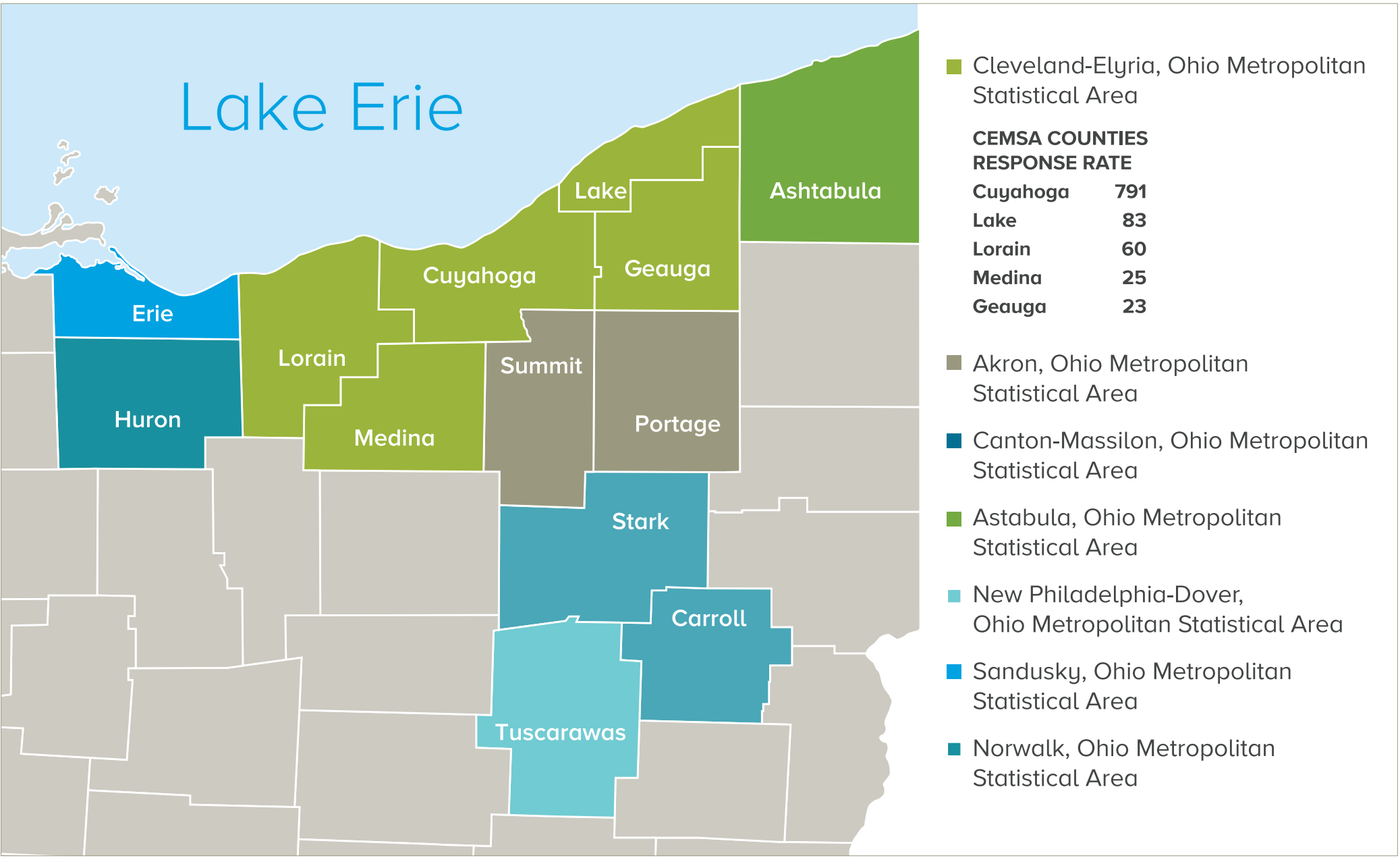


BARRIERS AND BENEFITS TO DESIRED BEHAVIORS FOR SINGLE-USE PLASTIC ITEMS IN NORTHEAST OHIO’S LAKE ERIE BASIN

Hardy, Scott and Jill Bartolotta

The Ohio State University, Ohio Sea Grant College Program,
1314 Kinnear Road, Columbus, Ohio 43212



BACKGROUND

Plastic debris in our water ecosystems presents a substantial threat to aquatic life, either by entanglement and ingestion of litter, or by absorption of PCBs and other contaminants (Derraik, 2002). Plastics have even been shown to act as a conduit for invasive species (Gregory, 2009), as well as persistent organic pollutants and heavy metals (Ashton, Holmes and Turner, 2010). Research further indicates that plastics are already ubiquitous in our waterways, and promise to become more so in the coming decades. Within the Great Lakes, there is evidence that the greatest concentrations of plastic are found closest to the most populated areas and sites of industrial activity (Derraik, 2002; Driedger et al., 2015). Lake Erie, with the highest population density of the five Great Lakes, has the highest concentrations of microplastics among Lakes Superior, Huron and Erie (Driedger et al., 2015), and the highest concentrations of plastic debris are found on public beaches that receive the highest numbers of visitors (Zbyszewski, Corcoran and Hockin, 2014).

METHODOLOGY

An online survey in fall 2016 gathered consumer behavior information for three plastic items (bags, bottles and cigar tips). Based on data from the CEMSA, 982 responses were analyzed. The survey asked respondents about their use and disposal behavior for all three plastic items. The survey also asked how the City of Cleveland can support the use of reusable alternatives to single-use plastic items, as well as how to encourage proper disposal. A focus group in November 2016 was used to gather data specifically on cigar tips. Participants included eight people from a diverse range of backgrounds, including institutions of higher learning, government and nongovernmental organizations that manage land in coastal locations where cigar tips are commonly found, and residents of the City of Cleveland. This study was determined to be exempt (Reference #2016E0043) by the Institutional Review Board at The Ohio State University.

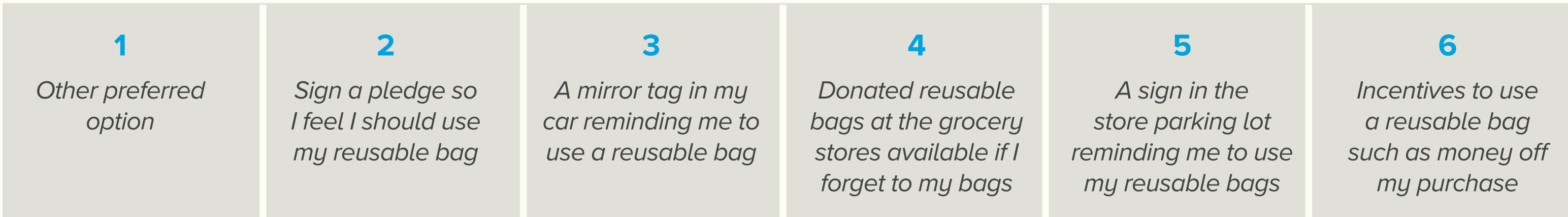
FUTURE RESEARCH

This research is a pilot study and only begins to better understand the barriers and consumer behaviors associated with single-use plastic bags, water bottles and cigar tips in a localized population of Northeast Ohio. Further research is needed in other Great Lakes cities as well as on other single-use plastic items. All options identified to encourage the use of reusable alternatives can be tested to determine the most effective behavior change. Lastly, there is much still to learn about cigar tip smoking culture and more in depth analysis is suggested to better understand how to tailor appropriate management actions.

RESULTS

Plastic Bags: Plastic bags and reusable bags are each always used about 30% of the time. The two most common reasons reusable bags are not always used are people forget to bring the bags with them into the store (80% of respondents) or they prefer to use the plastic bags for something else, such as lining garbage cans, making artwork, or picking up dog waste (55% of respondents). When asked how to encourage the use of reusable bags, the options rank as follows with the first mentioned being the most supported: financial incentives such as money off the purchase, reminders in store parking lots, donated bags for use at the store if you forget your own, a mirror tag for the car, and a pledge to sign to hold oneself accountable for bag use. Other options suggested by participants include a bag ban or fee, or educational displays in the store talking about issues arising from the use of plastic bags. Respondents were asked about their support for a bag fee or bag ban and 23% of respondents are in favor of a fee, 19% are in favor of a ban, 36% are in favor of either a fee or ban, and 22% are not in favor of any of the above. Results show that the majority of respondents are willing to move away from or pay for the use of bags. Therefore, positive messaging to encourage the use of reusable bags or policy aimed at a fee or ban is suggested.

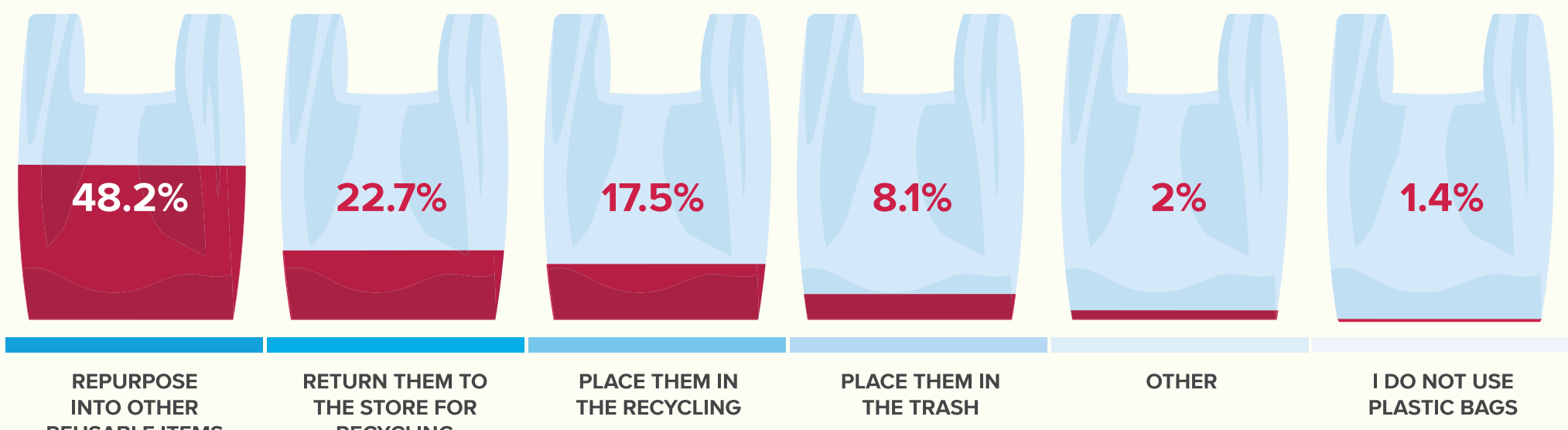
Top 6 Preferred Options to Encourage the Use of Reusable Bags



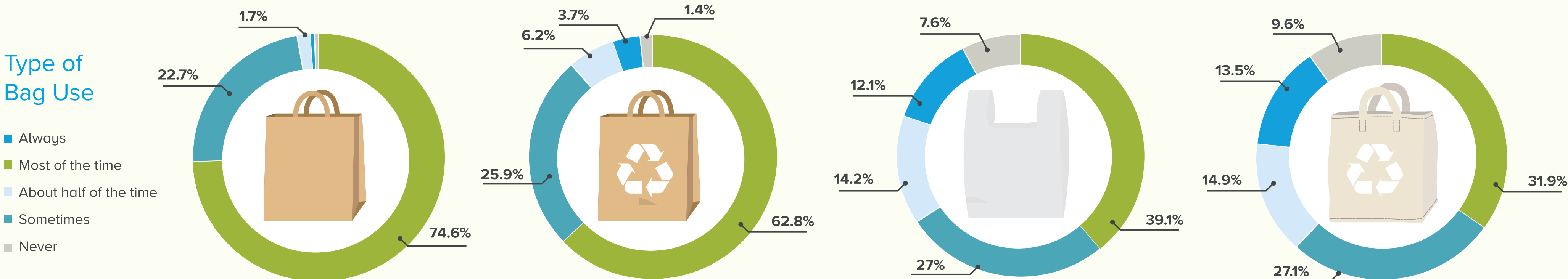
REASONS WHY REUSABLE BAGS ARE NOT ALWAYS USED	PERCENTAGE
I forget to bring them in the grocery store	80.4%
I use the plastic bag for something else (examples: on-line groceries, pick up shopping)	55.4%
I do not want to carry it with me	9.9%
Other	9.5%
I like getting a plastic bag from the grocery store	6%
I do not think they are clean or sanitary	4.7%
They are not suitable for the items I need to carry	3.5%
My friends and family do not use one	1.3%
I take public transportation to the grocery store and do not want to carry them with me	.3%



Plastic Bag Disposal Behavior



Type of Bag Use



References

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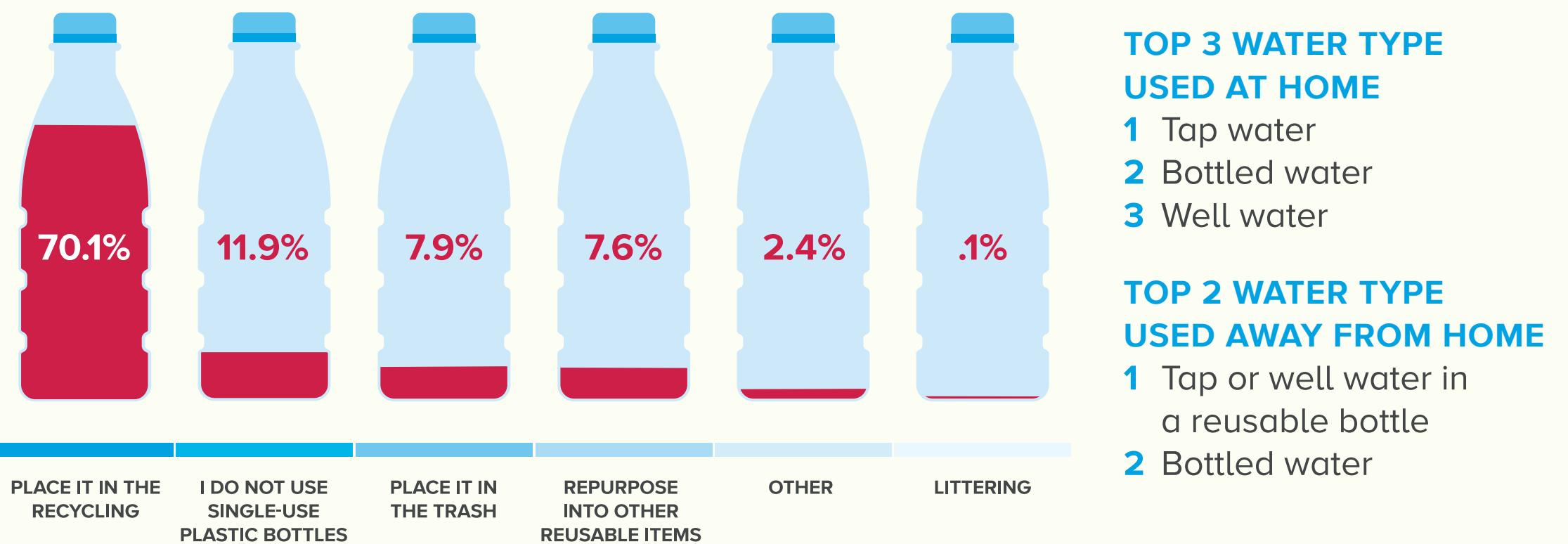
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ABSTRACT Almost 80% of trash found on beach cleanups in the Great Lakes has been identified as plastic (Driedger, Durr, Mitchell and Cappellen, 2015). This is especially evident along the southern beaches of Lake Erie, where high population and industrial development have contributed to the plastics problem. In Ohio, plastic bags and water bottles are two of the top ten items found on beach cleanups (Ocean Conservancy, 2015; Adopt a Beach Program, 2016). The most common items found are cigarettes and other smoking related materials. In total, cigar tips account for 14% of smoking related debris on Ohio beaches (Adopt a Beach Program, 2016). These trends are especially noticeable on beaches near Ohio's largest coastal city, Cleveland. In an effort to address the plastics problem in northeast Ohio's Lake Erie basin, Ohio Sea Grant examined the barriers and benefits to proper disposal for three plastic debris items: plastic bags, plastic water bottles and plastic cigar tips. An online survey and focus group gathered data on the use and disposal of these plastic items in the Cleveland-Elyria Metropolitan Statistical Area (CEMSA), and to solicit recommendations on how to affect positive behavior change. The results will be used by the City of Cleveland and thunder::tech to develop a social marketing campaign to support desired behaviors regarding the use and proper disposal of the three plastic items.

Water Bottles: Water from the tap or a well is the most commonly used water type at home, with bottled water being used less frequently. However, when away from home the use of bottled water increases. The top three reasons reusable water bottles are not always used is because respondents forget to bring the bottle with them (38%), they do not have access to enough water refill stations (18%), or do not want to carry the bottle (15%). When asked to identify ways to encourage the use of reusable bottles, the options rank as follows, with the first mentioned being the most supported: more filtered water stations that are regularly cleaned, more education on the cleanliness of tap water, a mirror tag for the car, and a pledge to sign to hold oneself accountable for their water bottle use. Forgetting a water bottle is a major barrier to using them, so reminders are suggested to encourage reuse along with more filtered water refill stations that are regularly cleaned.

Plastic Water Bottle Disposal Behavior



Options Supported to Limit the use of Plastic Water Bottles

Fee for use of single-use plastic water bottles	26%
Ban on use of single-use plastic water bottles	15%
Both	31%
Neither	28%

REASONS WHY REUSABLE WATER BOTTLES ARE NOT ALWAYS USED	PERCENTAGE
I forget to bring it with me	38.1%
There are not enough water refill stations that I can use to refill my reusable water bottle	17.5%
I do not want to carry it with me	14.7%
Other	9.5%
I prefer the taste of bottle water over tap water	5.3%
I do not use a reusable water bottle	5.1%
I think bottled water is cleaner than tap water	4.7%
I think bottled water is healthier than tap water	3.2%
My friends and family do not use one	1%
I Repurpose the plastic water bottle	.9%



Top 5 Preferred Options to Encourage the Use of Reusable Water Bottles



The Ohio Sea Grant College Program is part of NOAA Sea Grant, a network of 33 Sea Grant programs dedicated to the protection and sustainable use of marine and Great Lakes resources. ohioseagrant.osu.edu

